

$$\underbrace{(1! + 3! + 5! + \dots + 25!)}_7 \underbrace{(\dots + 24! + 22! + 20!)}_{\text{یکان ۶}} \underbrace{(\dots + 4! + 2! + 0!)}_{\text{یکان ۵}}$$

$$7 \times 6 = 42$$

یکان ها : ۲

الف) $\sqrt[4]{\left(\frac{7}{7} + \sqrt{\frac{1}{7}}\right)^{-2}} = \sqrt[4]{\left(\frac{\sqrt{7}+1}{\sqrt{7}}\right)^{-2}} = \sqrt[4]{7}$

ب) $\frac{(\sqrt{2} + \sqrt{5})^{\sqrt{10}-2}}{(\sqrt{10} + 2)^{\sqrt{10}-2}} = \frac{\sqrt{2}}{2}$ کوی کرون I

$3 - \sqrt{5} = \left(\sqrt{\frac{5}{2}} - \sqrt{\frac{1}{2}}\right)^2$
 $3 + \sqrt{5} = \left(\sqrt{\frac{5}{2}} + \sqrt{\frac{1}{2}}\right)^2$

$\sqrt{3 - \sqrt{5}} - \sqrt{3 + \sqrt{5}} = \left(\sqrt{\frac{5}{2}} - \sqrt{\frac{1}{2}}\right) - \left(\sqrt{\frac{5}{2}} + \sqrt{\frac{1}{2}}\right) = -\frac{2}{\sqrt{2}}$ II

از ضرب I و II داریم: $\sqrt{\frac{2}{2}} \times \frac{-2}{\sqrt{2}} = -1$

الف) $\frac{\sqrt{8} + \sqrt{27}}{5 - \sqrt{6}} = \frac{(2\sqrt{2} + 3\sqrt{3})(5 + \sqrt{6})}{19} = \frac{10\sqrt{2} + 4\sqrt{3} + 15\sqrt{2} + 9\sqrt{3}}{19}$

در کسر جدا جدا گویا کنیم

$\frac{2}{\sqrt{5}-1} \times \frac{\sqrt{5}+1}{\sqrt{5}+1} = \sqrt{5}+1 \Rightarrow$ جواب: $\sqrt{5}-1$

ب) $\frac{3\sqrt{3}-1}{4+\sqrt{3}} + \frac{1}{2-\sqrt{2}} \times \frac{2+\sqrt{2}}{2+\sqrt{2}} = \frac{3\sqrt{3}-1}{4+\sqrt{3}} + \frac{2+\sqrt{2}}{2+\sqrt{2}}$

$= \sqrt{2}-1 + 2+\sqrt{2} = 1+2\sqrt{2}$

الف) $\frac{\sqrt{1+\sqrt{3}} + \sqrt{\sqrt{3}-1}}{\sqrt{\sqrt{3}-2}} = A + 2$

بهرمان ۲ :

$\frac{1+\sqrt{3} + \sqrt{3}-1 + 2\sqrt{3}-2}{\sqrt{3}-2} = (A+2)^2$

$\frac{2(\sqrt{3}-\sqrt{2})}{(\sqrt{3}-\sqrt{2})} = (A+2)^2 \Rightarrow A+2 = \sqrt{2} \Rightarrow A = \sqrt{2}-2$ A = \sqrt{2}-2

$$\text{---)} \quad r^{\frac{1}{r}} \times r^{\frac{1}{r}} \times r^{\frac{1}{r}} \times r^{\frac{1}{r}} \times r^{\frac{1}{r}} \times r^{\frac{1}{r}} = 1$$

-K
A

$$\frac{r^x (1 + r + r^2 + r^3 + r^4 + r^5 + r^6)}{r^{x-2} (1 + r + r^2 + r^3 + r^4 + r^5 + r^6)} = \left(\frac{r}{r}\right)^x \times \frac{r^4 \times r^6}{r^2} = 0$$

-Q

$$\left(\frac{r}{r}\right)^x = \frac{r^4}{r^2} \Rightarrow x = 2$$

$$(a-b)^r (a+b)^r = [(a-b)(a+b)]^r = (a^r + b^r) - \epsilon a^r b^r$$

S

$$(a^r - b^r)^r \Rightarrow \left[\left(\sqrt{\sqrt{4}-r} - \sqrt{\sqrt{4}+r} \right)^r \right]^r$$

$$= (r\sqrt{4} - r\sqrt{r})^r = [r\sqrt{r}(\sqrt{r}-1)]^r = r^r - 14\sqrt{r}$$

$$14(r - \sqrt{r}) = t(r - \sqrt{r})$$

$$t = 14$$

$$A = \sqrt[r]{\frac{r}{\omega}} \times \sqrt[r]{\frac{r}{\omega}} \times \sqrt[r]{\frac{r}{r}} = \sqrt[r]{r}$$

$$A = \sqrt[r]{r} \Rightarrow (\sqrt[r]{r} A)^{-\frac{1}{r}} = \frac{1}{(\sqrt[r]{r} A)^{\frac{1}{r}}} = \frac{1}{\sqrt[r]{r A}} = \frac{1}{\sqrt[r]{r}} = \frac{1}{r}$$

$$a^{\frac{1}{r}} = \sqrt[r]{r} a^{\frac{1}{r}}$$

$$\sqrt[r]{r} a^{\frac{1}{r}} = 1$$

$$a^{\frac{1}{r}} = \frac{1}{\sqrt[r]{r}}$$

$$a = \frac{1}{\sqrt[r]{r}} \times \frac{\sqrt[r]{r}}{\sqrt[r]{r}} = \frac{\sqrt[r]{r}}{r}$$

$$a = \frac{\sqrt[r]{r}}{r}$$

$$\frac{\frac{1}{a} - r}{\sqrt[r]{r} + 1} = \frac{\frac{r}{\sqrt[r]{r}} \times \frac{\sqrt[r]{r}}{\sqrt[r]{r}} - r}{1 - \sqrt[r]{r}} = \frac{r(\sqrt[r]{r} - 1)}{\sqrt[r]{r} + 1} \times \frac{\sqrt[r]{r} - 1}{\sqrt[r]{r} - 1} = \underline{\underline{r - \sqrt[r]{r}}}$$

درمورد ضرب کسرها $\Rightarrow \frac{(\sqrt{x+a} - \sqrt{x-r})}{r} (\sqrt{x+a} + \sqrt{x-r})$

$$x+a - (x-r) = r+a$$

$$\sqrt{x+a} + \sqrt{x-r} - r = \frac{a}{r}$$

$$(x - \sqrt{c})^2 = x^2 + c - 2\sqrt{c}x = x^2 - 2\sqrt{c}x + c$$

$$a = \sqrt{(x - \sqrt{c})^2} = \sqrt{x^2 - 2\sqrt{c}x + c}$$

$$= \left(x + \frac{1}{x} + \sqrt{c}\right)^2 \left(x + \frac{1}{x} - \sqrt{c}\right)^2$$

$$= \left[\left(x + \frac{1}{x} + \sqrt{c}\right)\left(x + \frac{1}{x} - \sqrt{c}\right)\right]^2$$

$$= \left[\left(x + \frac{1}{x}\right)^2 - c\right]^2$$

$$= \left[\left(\sqrt{x^2 - c} + \frac{1}{\sqrt{x^2 - c}}\right)^2 - c\right]^2$$

$$= \left[\left(x^2 - c + \frac{1}{x^2 - c} + 2\right) - c\right]^2$$

$$= \left(\frac{x^2 - c + 1}{x^2 - c} + 2 - c\right)^2 = (x^2 - c)^2 = 19$$

$$x^2 = 19 \Rightarrow \boxed{x = \sqrt{19}}$$